

Q1: What is the pH Scale?	Q6: As acids become more acidic, their pH values increase or decrease?
Q2: The range of values of the pH scale is:	Q7: As bases become more alkaline, their pH values increase or decrease?
Q3: The range of values for acids on the pH scale is:	Q8: The pH scale is a _____ scale meaning it is base 10.
Q4: The range of values for bases on the pH scale is:	Q9: Which is more acidic: pH=1 or pH=3?
Q5: The pH value for a neutral substance is:	Q10: Which is more basic: pH=8 or pH=11

A6: decrease		A1: number line that assigns number values from 0 to 14 to acids and bases
A7: increase		A2: 0 to 14
A8: logarithmic		A3: Below 7
A9: pH=1, lower value is more acidic		A4: Above 7
A10: pH=11, greater value is more basic		A5: 7

Q11: How many times more acidic is pH=2 than pH=4?		Q17: Examples of basic substances are:
Q12: Acidic substances taste:		Q18: Two examples of indicators are:
Q13: Basic (or alkaline) substances taste:		Q19: Pure water has a pH of:
Q15: What is an indicator?		Q20: In acids, litmus paper turns from ____ to ____ in color.
Q16: Examples of acidic substances are:		Q21: In bases, litmus paper turns from ____ to ____ in color.

A17: cleaning products, drain cleaner, ammonia		A11: pH=2 is 100 times (or $10^2$ ) more acidic than pH=4
A18: cabbage juice, litmus paper		A12: sour
A19: 7		A13: bitter
A20: blue to red		A15: substances that change color when they come into contact with acids and bases
A21: red to blue		A16: stomach acid, lemon juice, vinegar, sour foods

Q22: The acid found in the stomach is:		Q27: The name of $\text{OH}^-$ is:
Q23: What does “dissociate” mean?		Q28: What is an Arrhenius acid? (What does it contribute to a solution?)
Q24: The chemical formulas of acids contain:		Q29: What is an Arrhenius base? (What does it contribute to a solution?)
Q25: The chemical formulas of bases contain:		Q30: What is a Bronsted-Lowry acid?
Q26: The formula for hydroxide is:		Q31: What is a Bronsted-Lowry base?

A27: hydroxide		A22: hydrochloric acid or HCl
A28: adds hydrogen ions, H <sup>+</sup> , to aqueous solution		A23: to break apart
A29: adds hydroxide ions, OH <sup>-</sup> , to aqueous solution		A24: Hydrogen ions (H <sup>+</sup> )
A30: proton donor (A proton is H <sup>+</sup> )		A25: Hydroxide ions (OH <sup>-</sup> )
A31: proton acceptor (A proton is H <sup>+</sup> )		A26: OH <sup>-</sup>

Q32: \_\_\_\_\_ acids and bases dissociate completely.

Q37: Is lithium hydroxide an acid or a base?

Q33: \_\_\_\_\_ acids and bases dissociate partially.

Q38: Is acetic acid (vinegar) a strong or weak acid?

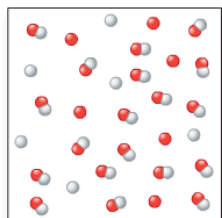
Q34: Is  $\text{H}_2\text{SO}_4$  an acid or base?

Q39: Is ammonia,  $\text{NH}_3$ , a strong or weak base?

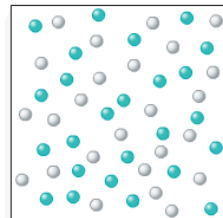
Q35: Is  $\text{NaOH}$  an acid or base?

Q40: Is hydrochloric acid (stomach acid,  $\text{HCl}$ ) a strong or weak acid?

Q36: Strong or weak acid?



●  $\text{H}^+$  ●  $\text{HCOO}^-$  ●  $\text{HCOOH}$



●  $\text{H}^+$  ●  $\text{Cl}^-$  ●  $\text{HCl}$

Q41: Strong or weak acid?

A37: Base

A32: Strong

A38: Weak

A33: Weak

A39: weak base

A34: Acid

A40: strong acid

A35: Base

A41: strong acid, dissociated completely

A36: Weak, dissociated partially



Q42: Which is a stronger acid: 1.0M $\text{H}_2\text{SO}_4$ , $\text{H}_3\text{PO}_4$ , or HCl?		Q47: If $[\text{H}^+] = 1.0 \times 10^{-5}$ pH = ?
Q43: Do acids have a higher concentration of $\text{H}^+$ or $\text{OH}^-$		Q48: If $[\text{H}^+] = 1.0 \times 10^{-11}$ pH = ?
Q44: pH = $-\log[?]$		Q49: If pH=2, pOH=?
Q45: pOH = $-\log[?]$		Q50: If $[\text{OH}^-] = 1.0 \times 10^{-2}$ , $[\text{H}^+] = ?$
Q46: pH + pOH =		Q51: If $[\text{OH}^-] = 1.0 \times 10^{-2}$ , pOH=?

A47: 5		<p>A42: The <math>\text{H}_3\text{PO}_4</math> would have a higher concentration of <math>[\text{H}^+]</math> and a lower pH.</p> <p>(It dissociates into <math>\text{H}^+</math>, <math>\text{H}^+</math>, <math>\text{H}^+</math>, and <math>\text{PO}_4^{3-}</math>)</p>
A48: 11		A43: Acids have a higher concentration of $\text{H}_+$
A49: 12		A44: $\text{H}^+$
<p>A50: If <math>[\text{OH}^-] = 1.0 \times 10^{-2}</math>,</p> <p><math>[\text{H}^+] = 1.0 \times 10^{-12}</math></p>		A45: $\text{OH}^-$
A51: 2		A46: 14

<p>Q52:</p> <p>If <math>[\text{OH}^-] = 1.0 \times 10^{-2}</math>, pH=?</p>		<p>Q57:</p> <p>Which has a higher pH: 1.0M <math>\text{Ca}(\text{OH})_2</math> or NaOH?</p>
<p>Q53:</p> <p><math>[\text{OH}^-][\text{H}^+] = ?</math></p>		<p>Q58: Which is larger in an acid; <math>[\text{H}^+]</math> or <math>[\text{OH}^-]</math>?</p>
<p>Q54:</p> <p>If <math>[\text{H}^+] = 1.0 \times 10^{-8}</math>, <math>[\text{OH}^-] = ?</math></p>		<p>Q59: As concentration of <math>\text{H}^+</math> increases, does pH increase or decrease?</p>
<p>Q55: If <math>[\text{OH}^-] = 1.0 \times 10^{-4}</math>, pH=?</p>		<p>Q60: If <math>[\text{H}^+] = 1.0 \times 10^{-9}</math>, pOH=?</p>
<p>Q56: If <math>[\text{H}^+] = 1.0 \times 10^{-9}</math>, pH = ?</p>		<p>Q61: What is <math>[\text{H}^+]</math> of neutral solutions?</p>

A57: $\text{Ca}(\text{OH})_2$ because it dissociates into $\text{Ca}^{2+}$ and $\text{OH}^-$ and $\text{OH}^-$ . More $\text{OH}^-$ means higher pH		A52: 12
A58: $\text{H}^+$		A53: $1.0 \times 10^{-14}$
A59: pH would decrease. More $\text{H}^+$ means stronger acid and lower pH		A54: $1.0 \times 10^{-6}$
A60: 6		A55: 10
A61: pH=7 so $[\text{H}^+] = 1.0 \times 10^{-7}$		A56: 9

Q62: What is dilution?		Q67: To move from a pH=1 to pH=3, it is diluted by a factor of:
Q63: When an acid is diluted, its pH _____. (increases or decreases?)		Q68: When diluting a solution from pH=12 to pH=9, it is diluted by a factor of:
Q64: When a base is diluted, its pH _____. (increases or decreases?)		Q69: If the original volume of a solution is 1mL, what is the final volume when it is diluted by a factor of 100?
Q65: When acids or bases are diluted, their pH moves toward _____ on the pH scale.		Q70: How much water should be added to 10 mL of HCl to move from pH=2 to pH=3?
Q66: What is the pH of a solution when 1 mL of an acid with a pH of 1 is diluted to 1000 mL with water?		Q71: What is the pH of a solution when 10 mL of a base with a pH of 10 is diluted to 100 mL with water?

<p>A67: 100x diluted (1 to 3 on pH scale = <math>10^2 = 100</math>) -or- (<math>1 \times 10^{-1} \div 1 \times 10^{-3} = 100</math>)</p>		<p>A62: adding more and more water to a solution</p>
<p>A68: 1000x more dilute (12 to 9 on pH scale = <math>10^3 = 1000</math>) -or- (<math>1 \times 10^{-12} \div 1 \times 10^{-9} = 1000</math>)</p>		<p>A63: increases (moves toward neutral pH of 7)</p>
<p>A69: (1 mL) x (100) =  100 mL</p>		<p>A64: decreases (moves toward neutral pH of 7)</p>
<p>A70: 90 mL (*pH 2 to 3 is dilute by factor of 10.  *10 mL (orig) x 10 = 100 mL total *Had 10 mL (orig) so add 90 more)</p>		<p>A65: 7</p>
<p>A71: pH = 9 (Diluting from 10 mL to 100 mL is a factor of 10. The pH will move one space on scale toward neutral 7.</p>		<p>A66: pH=4 (*1 mL to 1000 mL is a dilution of 1000x. *1000 = <math>10^3</math> *<math>10^3</math> means moving 3 spaces on pH scale)</p>







